

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a computing environment, a computer-implemented method for composing vector graphics, the method comprising:

an application programming interface (API) receiving a plurality of function calls for composing vector graphics,

~~the application programming interface being configured to receive function calls for composing vector graphics,~~ the function calls comprising calls defined by a markup language and an object model,

the markup language providing a string format and an object notation for describing a resource, and the markup language comprising an element class, the element class comprising a shape class, an image class, a video class, and a canvas class, and

the object model comprising

a base visual object which is a container for graphical content,

a container visual object which is a visual object that does not directly contain graphical content but contains one or more child drawing visual objects,
and

drawing visual objects which are visual objects that can contain graphical content and which comprise child objects which are organized in a zero-based, z-order space;

~~the function calls comprising calls defined within the markup language;~~

a parser/translator

- a) interpreting each of string format calls and object notation calls within the markup language,
- b) accessing a type converter, the type converter configured to convert string format calls to visual API objects,
- c) adding elements to an element tree within an element and layout system,
and

d) communicating resource-level data to a visual API;
an element and layout system translating data comprising an element tree into calls to the visual API;

the visual API

- a) accepting input from the parser translator, from the element and layout system, and directly from non-markup programming languages,
- b) interfacing with a scene graph,
- c) being configured to create scene graph objects, and
- d) providing access to a compositing and animation engine;

a compositing and animation engine interfacing with the visual API, and the compositing and animation engine managing the compositing, animating, and rendering of the scene graph; and causing a change in a graphics display in response to the modification of data in the scene graph.

2. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises causing initialization of a new instance of a visual class.

3. (Original) The method of claim 2 wherein causing data in the scene graph to be modified comprises invoking code to associate a transform with a visual object in the scene graph.

4. (Original) The method of claim 1 wherein causing data in a scene graph data structure to be modified comprises invoking code to place a drawing visual into the scene graph.

5. (Original) The method of claim 4 further comprising, causing a drawing context to be returned, the drawing context providing a mechanism for rendering into the drawing visual.

6. (Original) The method of claim 2 wherein causing data in the scene graph to be modified comprises invoking code to associate brush data with a visual object in the scene graph.

7. (Original) The method of claim 6 wherein the brush data comprises receiving data corresponding to a solid color.

8. (Original) The method of claim 6 wherein receiving brush data comprises receiving data corresponding to a linear gradient brush and a stop collection comprising at least one stop.

9. (Original) The method of claim 6 wherein receiving brush data comprises receiving data corresponding to a radial gradient brush.

10. (Original) The method of claim 6 wherein receiving brush data comprises receiving data corresponding to an image.

11. (Original) The method of claim 10 further comprising, receiving markup corresponding to an image effect to apply to the image.

12. (Original) The method of claim 1 further comprising, receiving markup corresponding to pen data that defines an outline of a shape.

13. (Original) The method of claim 1 wherein the markup corresponds to a shape class comprising at least one of the set containing rectangle, polyline, polygon, path, line and ellipse shapes.

14. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a geometry-related function to represent a rectangle in the scene graph data structure.

15. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a geometry-related function to represent a path in the scene graph data structure.

16. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a geometry-related function to represent a line in the scene graph data structure.

17. (Original) The method of claim 1 wherein the markup is related to hit-testing a visual in the scene graph data structure.

18. (Original) The method of claim 1 wherein causing data in a scene graph data structure to be modified comprises invoking a function related to transforming coordinates of a visual in the scene graph data structure.

19. (Original) The method of claim 1 wherein the markup is related to calculating a bounding box of a visual in the scene graph data structure.

20. (Previously Presented) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function via a common application programming interface to a visual object in the scene graph data structure.

21. (Original) The method of claim 1 further comprising invoking a visual manager to render a tree of at least one visual object to a rendering target.

22. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place a container object in the scene graph data structure, the container object configured to contain at least one visual object.

23. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place image data into the scene graph data structure.

24. (Original) The method of claim 23 wherein causing data in the scene graph to be modified comprises invoking a function to place an image effect object into the scene graph data structure that is associated with the image data.

25. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place data corresponding to text into the scene graph data structure.

26. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to provide a drawing context in response to the function call.

27. (Original) The method of claim 26 wherein the function call corresponds to a retained visual, and further comprising, calling back to have the drawing context of the retained visual returned to the scene graph data structure.

28. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place a three-dimensional visual into the scene graph data structure.

29. (Previously Presented) The method of claim 28 wherein causing data in the scene graph to be modified comprises mapping a two-dimensional surface onto the three-dimensional visual.

30. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place animation data into the scene graph data structure.

31. (Original) The method of claim 30 further comprising communicating timeline information corresponding to the animation data to a composition engine.

32. (Original) The method of claim 31 wherein the composition engine interpolates graphics data based on the timeline to animate an output corresponding to an object in the scene graph data structure.

33. (Original) The method of claim 32 wherein the composition engine is at a low-level with respect to the scene graph.

34. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises invoking a function to place an object corresponding to audio and/or video data into the scene graph data structure.

35. (Original) The method of claim 1 wherein causing data in the scene graph to be modified comprises changing a mutable value of an object in the scene graph data structure.

36-62 (Canceled).